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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,992	04/02/2004	W. Joe East	4209-29	7268
23117	7590	08/11/2005		
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER DUONG, THO V	
			ART UNIT 3743	PAPER NUMBER
DATE MAILED: 08/11/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/815,992	Applicant(s) EAST, W. JOE	
	Examiner Tho v. Duong	Art Unit 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 10-17, 28-35 and 42-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 18-26 and 36-41 is/are rejected.
- 7) ☒ Claim(s) 9 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/22/04; 7/19/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 10-17,28-35 and 42-44 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/14/2005.

Applicant's election with traverse of species A in the reply filed on 7/14/2005 is acknowledged. The traversal is on the ground(s) that claims 1-5,18-23 and 36-40 are generic. This is not found persuasive because the basis for the restriction is that the species are patentably distinct. The examiner agrees that claims 1-5,18-23 and 36-40 are generic. However, these claims are not allowable over the prior art as follows

The requirement is still deemed proper and is therefore made FINAL.

Specification

The disclosure is objected to because of the following informalities: in paragraph 43, at line 18, "a thermal transfer plate 25-1 with is integral" appears to be a typographical error of "a thermal transfer plate 25-1 which is integral". In paragraph 47, at line 19, ".as well as being fused to itself." run on problem needed to be corrected.

Appropriate correction is required.

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the

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printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The abstract of the disclosure is objected to because the abstract exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference numbers "22-1" , "22-" , "22-2" , "22-3" in paragraphs 43,44,51,52 and 56. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

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Claims 9 and 27 are objected to because of the following informalities: the sentence of “wherein the cover has is an essentially parallelepiped...” needs to be grammatically corrected. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 36-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Sauciuc et al. (US 2003/0062151A1). Sauciuc discloses (figures 5a-c and paragraphs 0023-0025) a heat sink monolith comprising a copper thermal transfer plate (110); a diffusion bonded wire mesh structure (112) diffusion bonded to the thermal transfer plate; the wire mesh structure is folded in an essentially spiral configuration; the wire has about 0.012 inch diameter; and mesh size is about 50-150.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 18 and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (US 6,328,529) in view of Sauciuc et al. Yamaguchi discloses (figures 39-43) a

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heat sink assembly comprising a monolith includes a thermal transfer plate (306); a cover (411) which fits over the monolith to define a chamber; the cover having plural walls and an inlet (411d) through which fluid enters the chamber and an outlet (between 411a's) through which the fluid exits the chamber; a serpentine fin (307) has a fold axis is substantially perpendicular to a path of the fluid in the chamber from the inlet to the outlet (fluid enters from the top flowing downwardly, perpendicular to the fold axis, which is in horizontal plane) and a pump (410) which pumps fluid through a circulation path including the heat sink assembly. Yamaguchi does not disclose the serpentine fin is a diffusion bonded wire mesh structure. Sauciuc discloses (figures 5a-c and paragraphs 0023-0025) a heat sink monolith comprising a copper thermal transfer plate (110); a diffusion bonded wire mesh structure (112) diffusion bonded to the thermal transfer plate; the wire mesh structure is folded in an essentially serpentine configuration; the wire has about 0.012 inch diameter; and mesh size is about 50-150. Sauciuc further discloses (paragraph 26) the purpose of using a diffusion wire mesh is to minimize boundary layer formation with only a small increase in pressure and to provide a nearly continuous level of surface irregularity caused by the intertwined mesh. Since Yamaguchi and Sauciuc are both from the same field of endeavor and/or analogous art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use Sauciuc's teaching in Yamaguchi's heat sink for the purpose of minimizing boundary layer formation with only a small increase in pressure and providing a nearly continuous level of surface irregularity caused by the intertwined mesh.

Claims 1-8 and 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dessiatoun et al. (US 6,898,082) in view of Sauciuc et al. Dessiatoun discloses (figure 14) a heat sink assembly comprising a monolith includes a thermal transfer plate (88); a cover (14,16) which fits over the monolith to define a chamber; the cover having plural walls and an inlet (30) through which fluid enters the chamber and an outlet (30) through which the fluid exits the chamber; a fin (307) has a fold axis is substantially perpendicular to a path of the fluid in the chamber from the inlet to the outlet (fluid flows from left to right). Dessiatoun further disclose (figure 2) the assembly has a pump (38) which pumps fluid through a circulation path including the heat sink assembly and a heat exchanger (36). Yamaguchi does not disclose the fin is serpentine and of diffusion bonded wire mesh structure. Sauciuc discloses (figures 5a-c and paragraphs 0023-0025) a heat sink monolith comprising a copper thermal transfer plate (110); a diffusion bonded wire mesh structure (112) diffusion bonded to the thermal transfer plate; the wire mesh structure is folded in an essentially serpentine configuration; the wire has about 0.012 inch diameter; and mesh size is about 50-150. Sauciuc further discloses (paragraph 26) the purpose of using a diffusion wire mesh is to minimize boundary layer formation with only a small increase in pressure and to provide a nearly continuous level of surface irregularity caused by the intertwined mesh. Since Dessiatoun and Sauciuc are both from the same field of endeavor and/or analogous art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use Saucius's teaching in Dessiatoun's heat sink for the purpose of minimizing boundary layer formation with only a small increase in pressure and providing a nearly continuous level of surface irregularity caused by the intertwined mesh.

Allowable Subject Matter

Claims 9 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Carlson et al. (US 6,018,459) discloses a porous metal heat sink.

Lee (US 5,518,071) discloses a heat sink apparatus.

Hatada et al. (US 5,197,576) discloses a cooling heat sink that has wire fins.

Arai et al. (US 5,358,032) discloses a heat sink that has corrugated wire mesh heat sink attached on a metal plate.

Gourdine (US 5,422,787) discloses a cooling system that has inlet and outlet on opposite side walls.

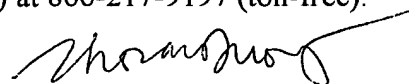
Daikoku et al. (US 6,351,384) discloses a device for cooling multiple chip modules.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tho v Duong
Primary Examiner
Art Unit 3743

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August 1, 2005